Service Technician Manual

GE REFRESH AHNB20WBUS / AHNB11WBUS DEHUMIDIFIER

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Preface

:: Purpose ::

This service manual provides various service information, containing the mechanical, electrical and electronic parts.
Be sure to read the manual prior to servicing the unit.

:: Safety Precaution ::

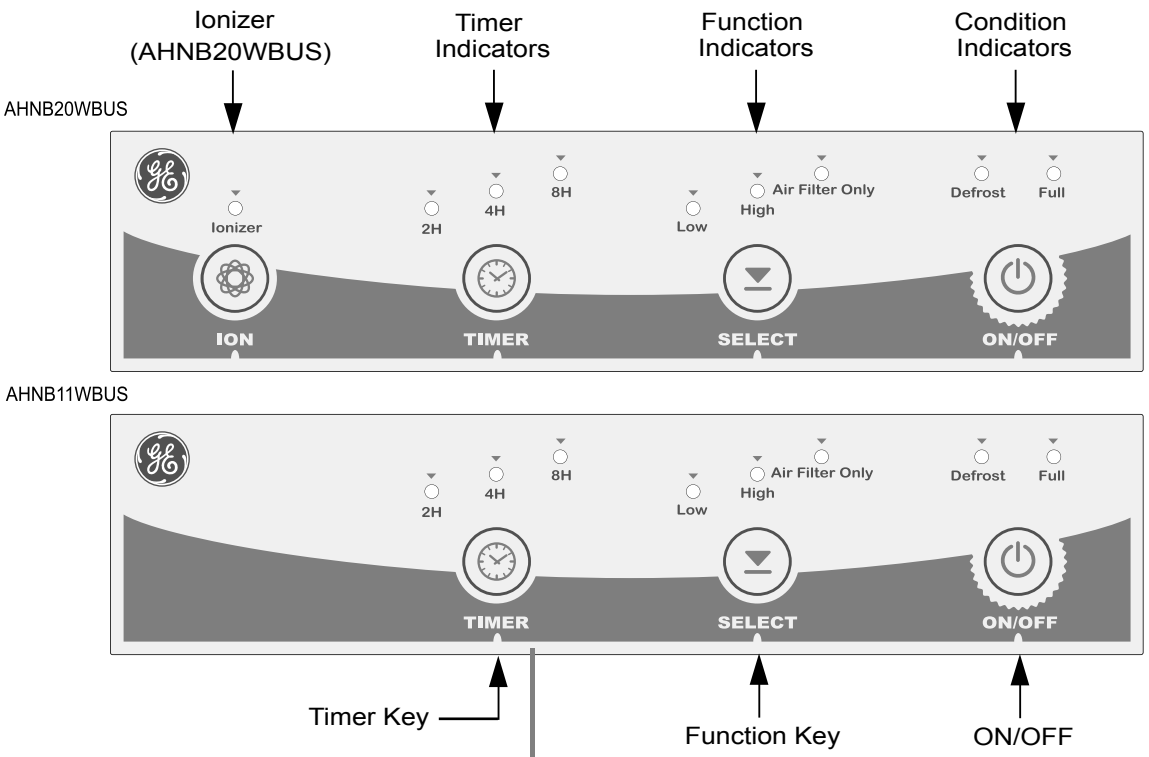
1. When servicing the unit, unplug the power cord.
2. After servicing the unit, make an insulation resistance test to protect the customer from being exposed to shock hazards. Isolation resistance: 1MΩ (500V, 1sec.)

:: Specifications ::

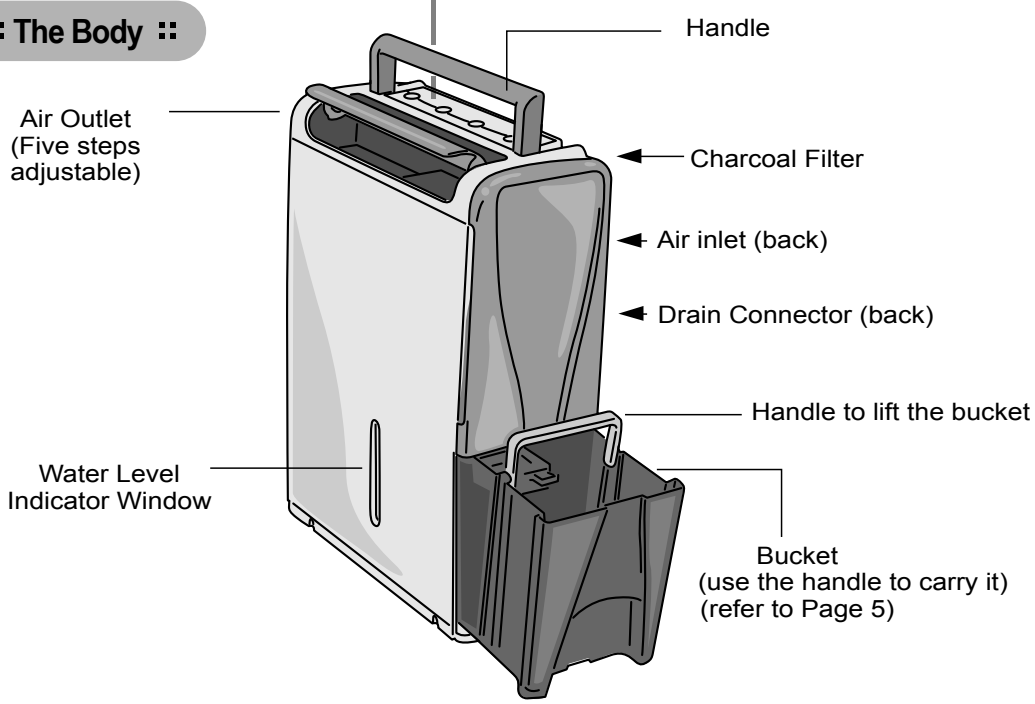
Model	AHNB20WBUS	AHNB11WBUS
Function	For ambient temperature 5 - 35 ℃	
Capacity (30 °C, RH80%)	20L/day	11L/day
Power AC	220-240V ac/50Hz	
Power Consumption	370W	200W
Control	Micro-control automatic defrosting, 2 fan speeds, Unique air purifying function, Auto pause when bucket is full.	
Net Weight	10.7 Kg	10 kg
Dimensions	W310 x D270 x H575 mm	
Refrigerant	HFC-134a	

Outer Parts

:: The Control Panel ::

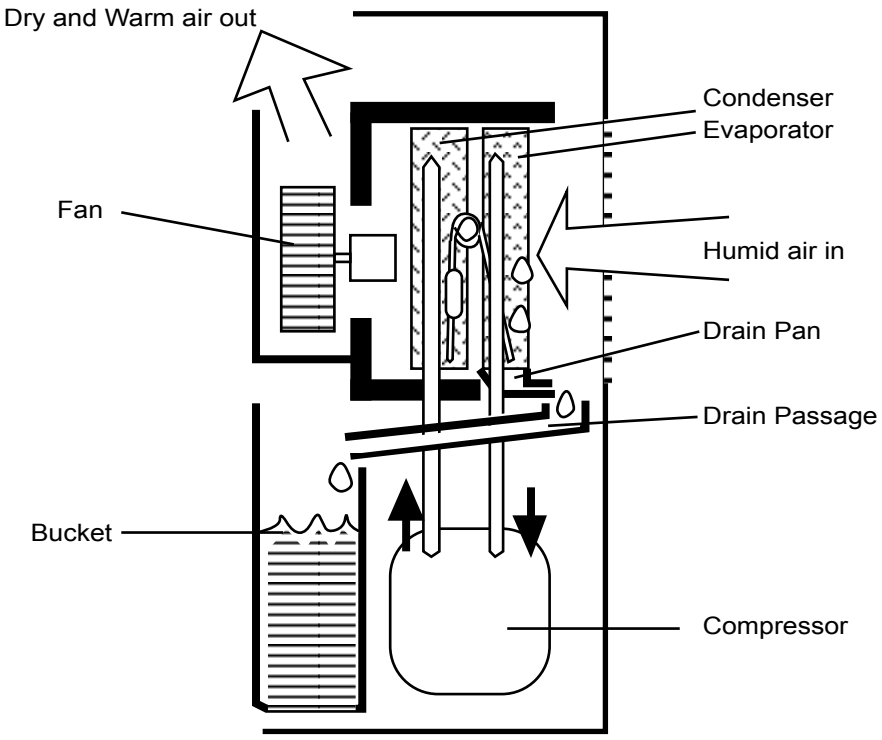


:: The Body ::



How the Dehumidifier Works

The dehumidifier, as shown in the figure, consists of a small refrigerant system and a fan. The fan pulls humid air from the room, across the cold evaporator where the water drips off into a water bucket or a drain hose. The air then passes over the warm condenser and slightly increases in temperature.



Working Principle
Side View

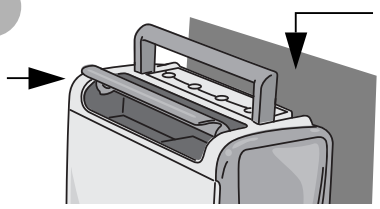
:: Defrosting Control ::

Under temperature around 5°C, frost may generate on the evaporator. A defrost sensor fixed on the evaporator will sense the icing condition and stop the compressor but remain the fan, through microcomputer-control, for 6 minutes defrosting. Then retrieve the compressor running at least 12 minutes.

Installation

:: To Set the Unit ::

Do not insert small objects into the cabinet : this may damage the unit.

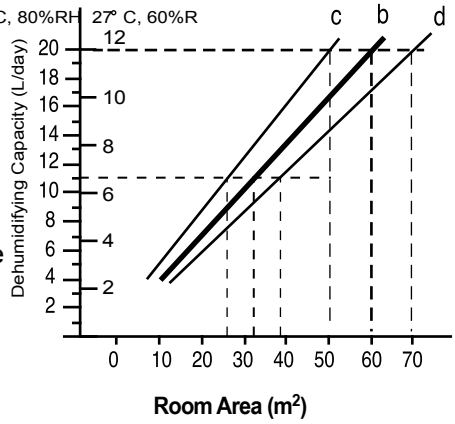


Keep a clearance of at least 5 cm at the back of the unit for air intake.

Put the machine on a stable horizontal surface or water may leak.

:: Space and Capacity ::

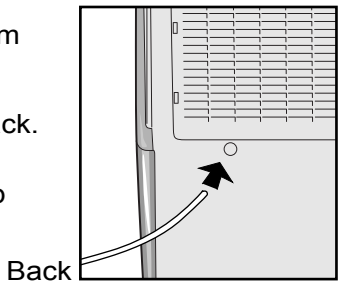
b) Generally, this 20(11) L/day (30 ºC, 80%) unit can serve a room of 60(32) square meter.
c) For a high moisture or open place, the capable area may be less than 50(26) square meter.
d) For a low moisture or closed place, the capable area may be larger than 70(37) square meter.
For a room larger than 70(37) square meters, it is recommended to use 2 or more units at different corners.



:: Continuous Drainage ::

You may use a hose with an outer diameter of 12.7 mm (1/2 inch) for continuous drainage :

1. Use a screwdriver to remove the knockout at the back. Attach the tubing to the connector through the hole.
2. The tubing should be lead to the drain with no sharp bends.



:: To Move the Unit ::

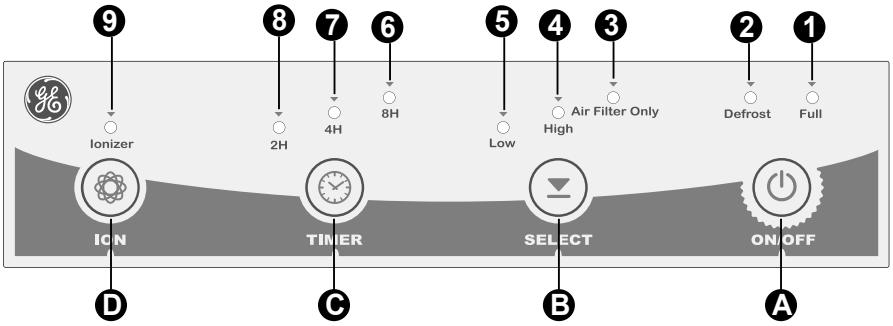
1. To move the unit, use the retractable handle.
2. Unplug the cord and empty the water bucket before moving the unit.
3. Before operating the unit, make sure the bucket is well in place.

Brief Operations

:: Before Using ::

a) Turn the multi-directional air outlet before operating the unit.
b) Must fit the bucket properly.

:: Operating ::



(AHNB20WBUS)

1. Plug the power cord to the proper power source; press ON/OFF key Ⓐ to start the unit.
2. Press the select key Ⓑ to activate the functions ❺ ❹ and ❸ , in this order.
3. Press the timer key Ⓒ to select the appropriate turn off time. If Timer Indicator doesn't on, the unit is not programmed to turn off automatically.
4. Press the Ion key Ⓓ (AHNB20WBUS) to start the Ionizer. Press the ION key again to stop the ionizer.
5. Press the ON/OFF key Ⓐ again to turn off the unit. (Unplug the cord when the unit is not expected to be used for a long period of time.)

Note: A protection mechanism prevents the compressor to start within 3 minutes after the unit is turned off.

:: Function Keys ::

Ⓐ ON/OFF

Ⓑ Function Key

Ⓒ Timer Key

Ⓓ Ionizer (AHNB20WBUS)

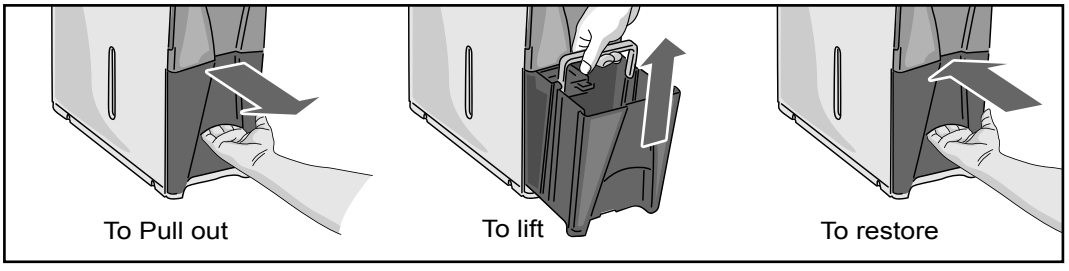
Brief Operation

:: Indicators ::

❶ Full: Blinks when the bucket is full or not in place. Please empty the bucket or restore it in the correct position.
❷ Defrost: Blinks when defrosting. It will auto-return to dehumidifying.
❸ Air Filter Only: The unit only filters the air and does not dehumidify.
❹ High: Lit when running at high dehumidification speed.
❺ Low: Lit when running at normal dehumidification speed.
❻ 8 Hours: The unit will be shut-off automatically after 8 hours.
❼ 4 Hours: The unit will be shut-off automatically after 4 hours.
❽ 2 Hours: The unit will be shut-off automatically after 2 hours.
❾ Ionizer: Lit when the Ionizer is on. (AHNB20WBUS)

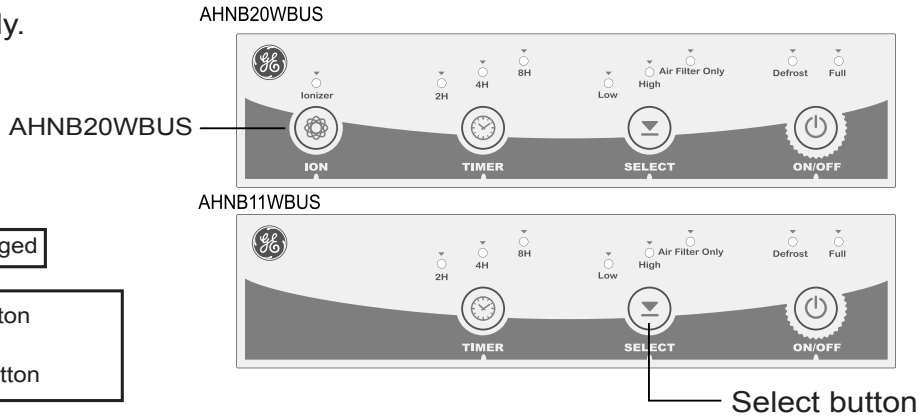
:: To Empty the Bucket ::

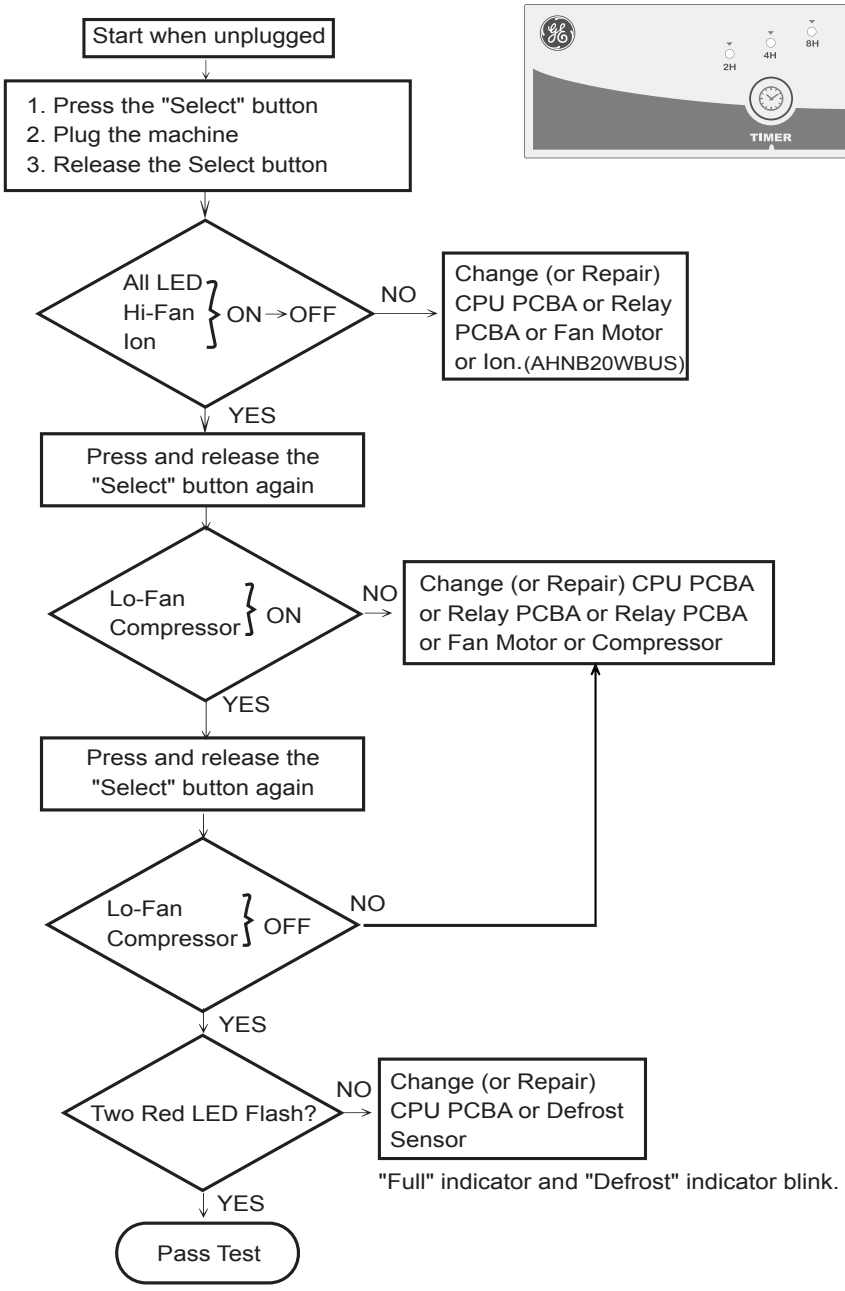
(1) When the bucket is full of water, the unit stops and the "Full" indicator blinks.
(2) Do not remove the bucket immediately as the unit may still working or shutting down. Removing the bucket too fast may cause some water dripping.
(3) To remove the bucket, pull it out and lift it carefully.
(4) After pouring out the water, clean the bucket and restore in place.



Fast Function Test

The following procedure is for maintenance test only.

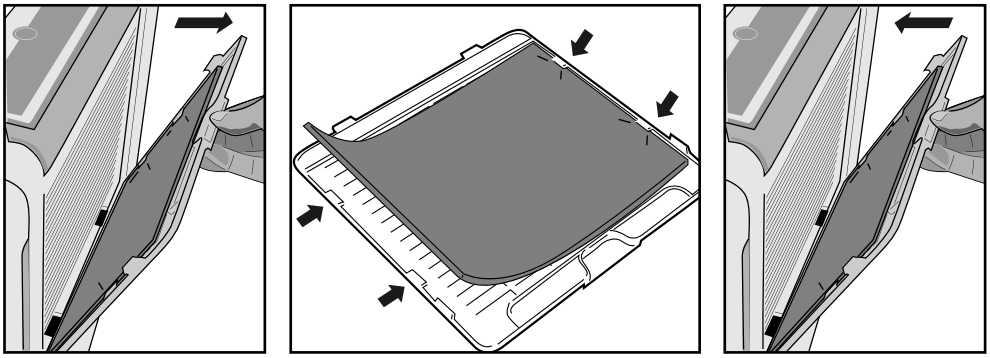




Disassembly of Outer Parts

:: Air Filter ::

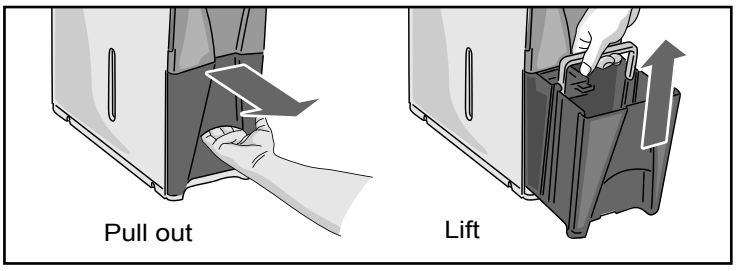
1. Turn off the machine and pull out the filter at the back.
2. Do not wash the Charcoal Filter. Please replace it with a new filter after 3 to 6 months (recommended).
3. Contact with your dealer should you need a new Charcoal Filter.



:: Bucket ::

Turn off the unit first.
1. To remove the bucket, first pull it out.
2. Lift it by the handle inside the bucket.

To reinstall, refer to the above removal procedures.



:: Case ::

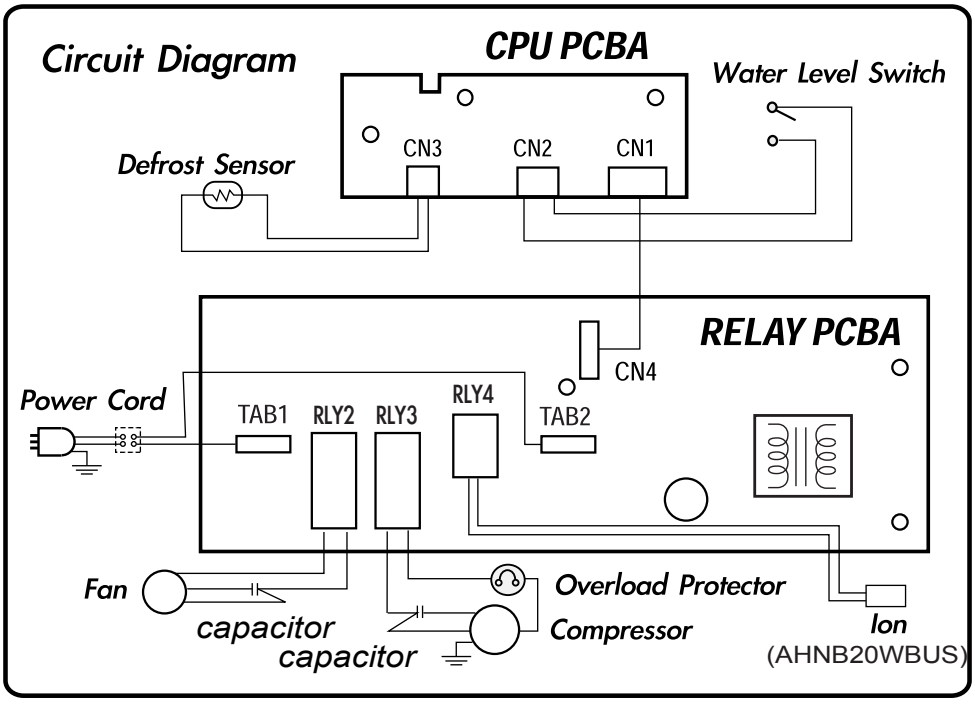
Unplug the cord first.
1. Remove the bucket.
2. Remove the filter cover.
3. Remove the handle by push slightly inward.
4. Then, remove 15+2 screws which fasten the front case and rear case and the base.

To reinstall, refer to the above removal procedures.

Disassembly of PCBA and Fan Motor

:: PCBA (CPU PCBA, Relay PCBA) ::

First remove the case. (Refer to Page 8)
Remove the screws that fasten the PCBA.
Unplug the wires from connectors.
To reinstall the components, refer to the above removal procedures and the wiring diagram.



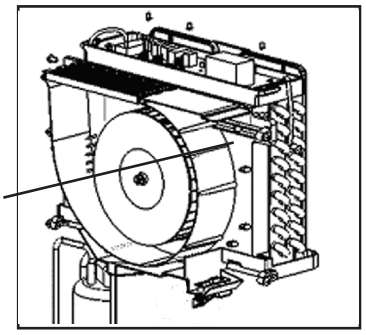
Wiring Diagram

:: Fan and Fan Motor ::

First remove the case. (Refer to Page 8)
Remove the nut and washers which fasten the fan. Note the left-hand screw shaft. Then, remove the screws which fasten the fan motor.
To reinstall, refer to the above removal procedures.

Disassembly of Defrost Sensor, Reed Switch, Compressor Terminals

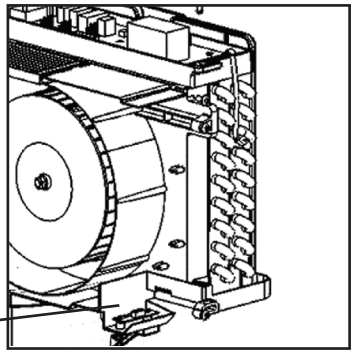
:: Defrost Sensor ::



First remove the case.
a) Unplug the sensor wire from the CPU PCBA.
b) Release the sensor tip fixed on the evaporator coil.
To reinstall, refer the above removal procedures.

Note: the sensor tip should firmly fit in the tube at the original position.

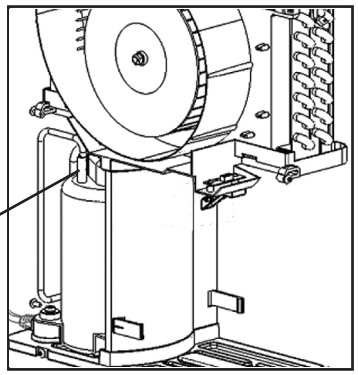
:: Water Level Switch (Reed Switch) ::



First remove the case. (Refer to Page 9)
c) Unlock the locking tabs to move out the shield plate for access of the switch.
To reinstall, refer to the above removal procedures.

Note: Connect the wires to the common and NC poles.

:: Compressor Terminals ::



First remove the case.
d) Remove the clamp and terminal cover. Pull out the starting relay and the overload Protector. Unplug the wires.

To reinstall, refer to the above removal procedures.

Locating Refrigerant Leaks / Evacuation and Recharging

:: Refrigerant Leaks ::

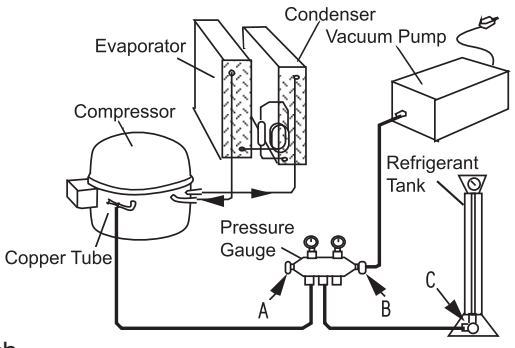
An undercharge of refrigerant is usually caused by a leak in the system. Such leaks must be located and repaired before evacuating and recharging, as simply adding refrigerant or recharging will not permanently correct the problem and may lead to a compressor burn-out. If a leak is suspected, attempt to find it before opening the system.
Leaks, particularly small ones, are easier to find if the surrounding air is not contaminated with refrigerant from the system. Leaks are more easily found if the system is pressured to at least 75 p.s.i. gauge. If necessary, attach a line-piercing valve to the compressor process tube and add enough refrigerant to test. Most leaks can be found with a Halide torch. However, for very small leaks, it may be necessary to use an Electronic Leakage Detector, or the bubble method, to pinpoint the leaks.
Note: Be sure the system has a positive pressure before using the bubble method of leak testing. A vacuum within the system could draw in moisture and other contaminates.

:: Evacuation ::

Cut compressor process tube, purge system slowly so as not to blow out system oil. Purge to a well ventilated area or outside atmosphere. Use solder rod to weld on a new process tube.
Connect vacuum pump to compressor through process tube. Start vacuum pump, slowly open manifold valve A and B and leave valve C closed. Operate vacuum pump until vacuum of 600 microns is obtained. Close vacuum pump suction valve B and observe vacuum gauge for a few minutes. A rise in pressure would indicate a possible leak or moisture is still present in the system.
With valve B still closed, stop the vacuum pump. Open valve C and allow enough refrigerant to enter the system that would raise the pressure to 40 to 50 p.s.i. gauge pressure. Close valve C. Leak test low side of the system. Run compressor for a few minutes then leak test the high side. There should be no leaks. You are now ready for final evacuation.

:: Recharging ::

After evacuation, leaving valve B closed, observe liquid level in charging cylinder. Check rating label for correct refrigerant charge. Open valve C and allow proper charge to enter the system. Close valve C. Use pinch-off tool, clamp on to the process tube. Using a tube cutter, cut process tube about 2 inches from pinch-off tool. Solder process tube closed. Then leak test the pinch -off connection.



Evacuation and Recharging

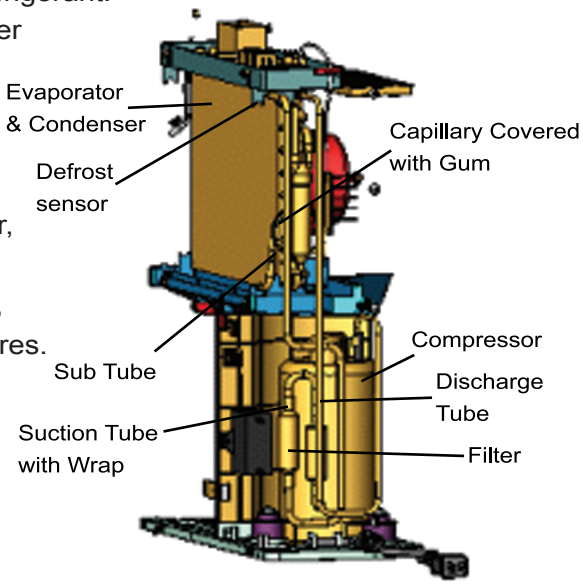
Replacement of Refrigerant System

:: Note ::

1) Do not replace a system component unless an unrepairable leak or malfunction is found within the component.
2) When replacing components be careful not to damage adjacent parts when using a torch on soldered joints. If necessary, use a sheet of asbestos as a heat shield, and wrap a wet cloth around the tubing to reduce heat transfer.
3) After servicing, always leak test the entire system, especially new joints, before final recharging. Clean off any soldering flux, if used, from the joints before leak testing, as flux can seal off pinhole leaks that would show up later.
4) Replace the refrigerant filter whenever a refrigerant component is replaced or the refrigerant is recharged so as to prevent moisture corrosion to the components.

:: Replace the System Components ::

- First remove the case. (Refer to Page 8)
- Pierce process tube to discharge the refrigerant.
- Remove 2 screws which fasten the upper chassis, and remove the chassis along with the control panel.
- Unbraze the interconnecting tube at the component to be removed.
- To reinstall a component, replace, repair, evacuate, charge refrigerant, leak test , pinch-off, silver solder the process tube, and refer to the above removal procedures.



The Tubing Left Side View

Normal Conditions and User Checklist

Normal Conditions

It is normal that
1. The compressor is controlled to stay at least 3 minutes after it stop, and after plugged to the power, so as to ensure a smooth start. This will extend the life of the unit.

User Checklist

(1) When unit fails to run,
- Is "FULL" blinking? Is the bucket in a stable position? Check and reset the bucket.
- Is power cord unplugged?
- Is the power on?
- Is the unit defrosting ("Defrost" blinking)?

(2) When the performance seems low,
- Is the filter dirty? Clean or replace it.
- Is the inlet or the outlet covered?
- Is the room temperature or humidity low (defrosting often)?

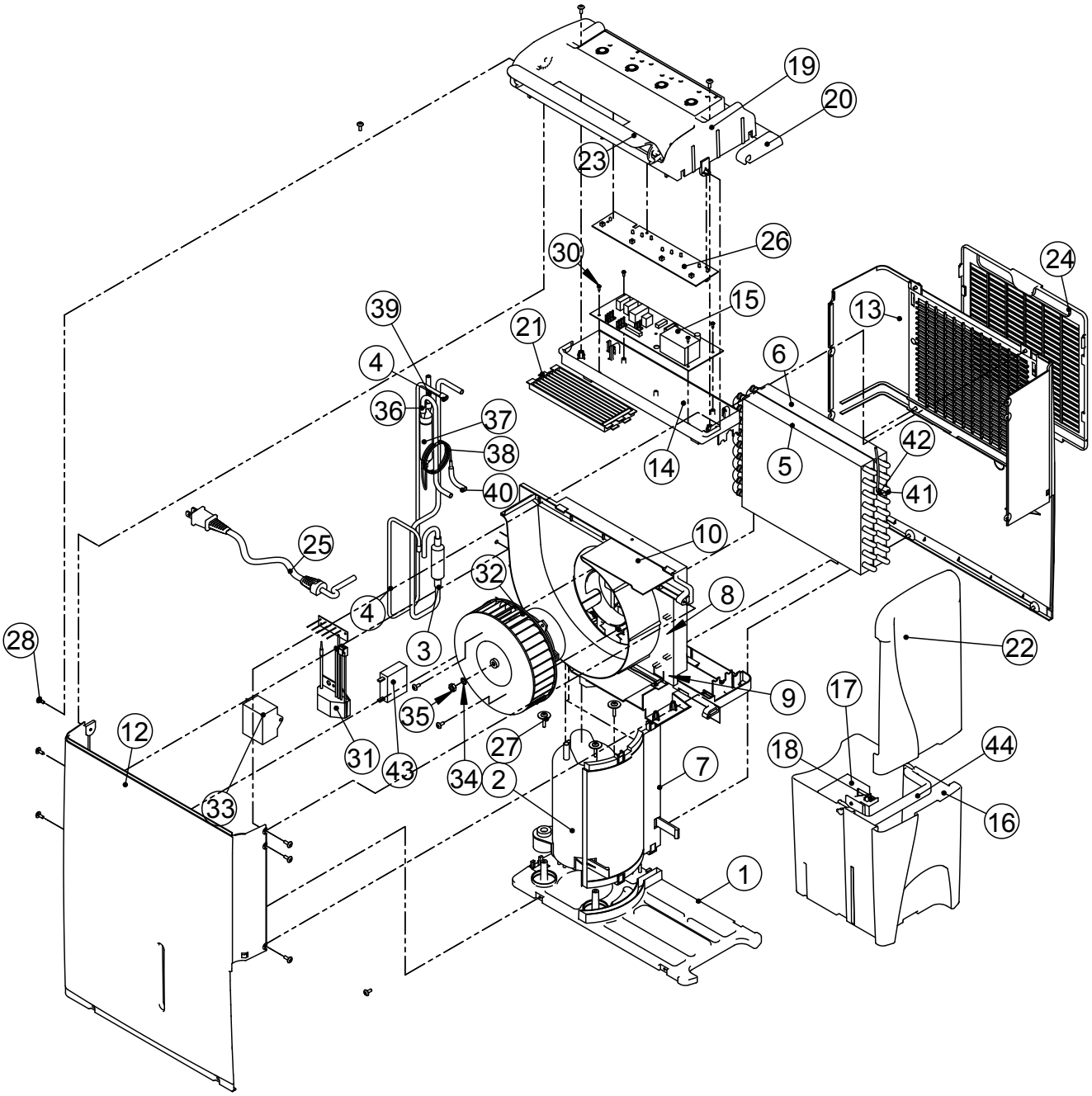
(3) When the noise occurs,
- Is the unit well in place?
- Is the filter dirty?

□

Complaints and Solutions Matrix

Complaints	Possible Cause	Remedy
Control panel defect	- LED failure - Button failure	- Replace LED or CPU PCBA - Repair the button
Dehumidifier does not operate (both compressor and fan motor do not operate)	- "full" lights - No power - Poor plug contact - In the "off" condition - CPU or Relay PCBA failure	- Empty or take out the bucket and restore in place - Check power supply - Replace or repair plug - Turn on the unit - Replace CPU PCBA or Relay PCBA
Fan motor runs but compressor does not run (Not in 3 minute protection)	- Relay PCBA failure - Compressor failure	- Replace Relay PCBA - Check wires, overload protector, capacitor and compressor
Frost or ice forms on evaporator	- Compressor just started - Unit short of refrigerant - Fan motor failure	- Normal. Disappear within 30-40 minutes - Repair leak and recharge designated quantity - Replace fan motor
Insufficient dehumidification	- Low relative humidity - Poor air circulation - Air filter or heat exchangers clogged with dust and dirt	- Turn off the unit or choose the "Air Purify" function - Move to obtain unobstructed air circulation - Clean / replace air filter and heat exchangers
Water drips on floor	- Drain passage clogged - Leak in water bucket - Water bucket overflows - Poor drain hose connection	- Clean the passage - Replace water bucket - Check reed switch and float activation - Check drain hose
Noisy operation	- Tubing hits case - Fan loose or hits something - Internal compressor noise	- Adjust tubing - Check the fan and remove foreign objects - Replace compressor

Exploded Component Views



Part List

AHNB20WBUS

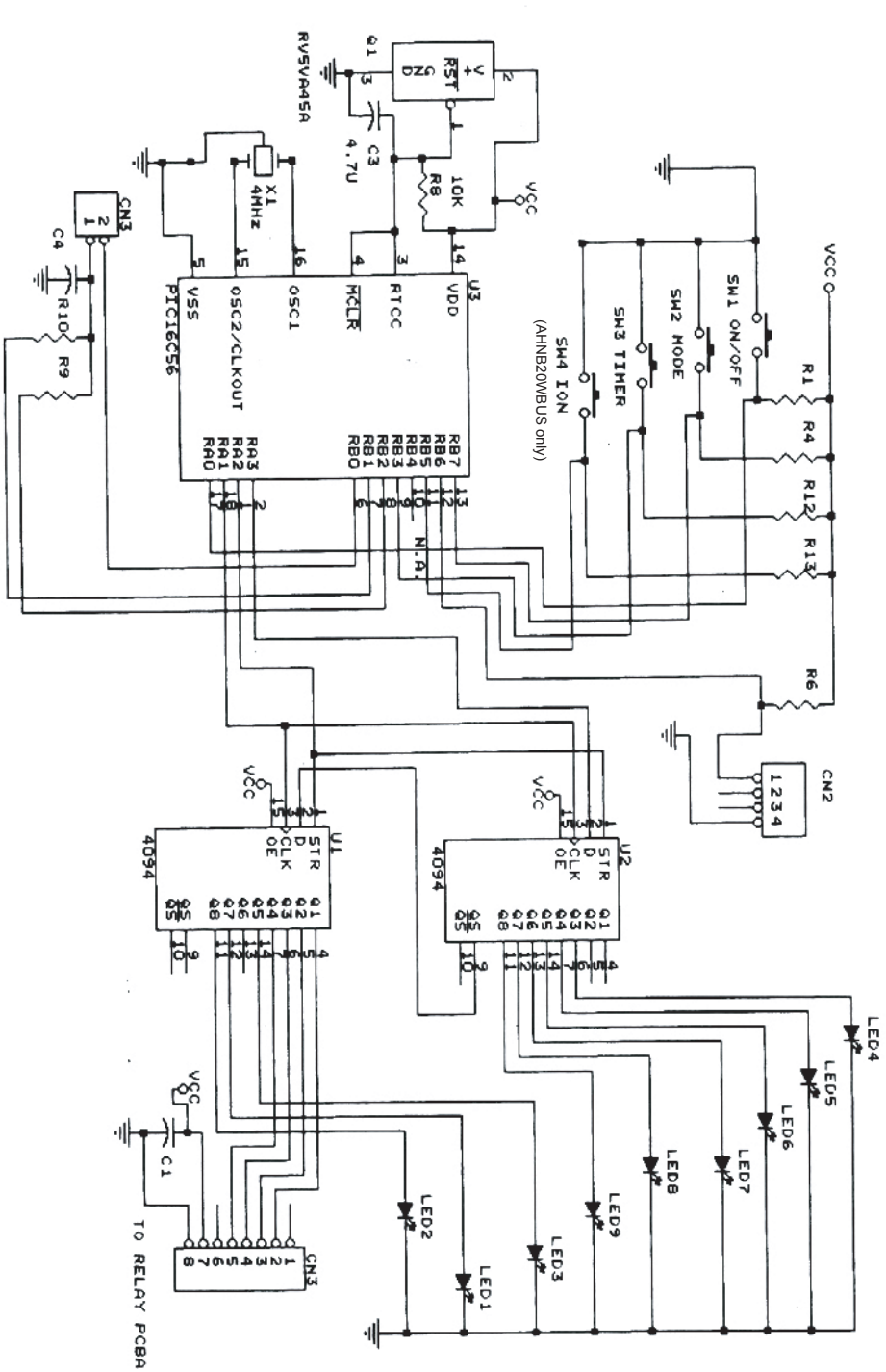
	QTY	Part No.	Component
1	1	311000740	Base, DS
2	1	740004550	Compressor, 6TD068SCB
3	1	741202970	Suction Tube, DS
4	1	741202980	Discharge tube, DS
5	1	342200510	Condenser, DJ 12
6	1	342200500	Evaporator, 115P, 9R
7	1	311000730	Mid Shield, DS
8	1	311000750	Drain Pan, DS
9	1	DSWATER	Water Level Signal Wire
10	1	311000790	Air Duct, DS 20
11	1	246600180	Fan
12	1	311000700	Front Case, DS
13	1	311000710	Rear Case, DS
14	1	311000780	Heat Exchanger Upper, DS
15	1	DSRELAY2	PCBA, RELAY, DS, 220V
16	1	311000770	Bucket, DS modified to 01
17	1	311501180	Float, DS
18	1	705000060	magnet, 16x13x3t
19	1	311000720	Upper Cover, DS
20	1	311501160	Handle, DS
21	1	311200530	Air Outlet Grill, DM, DE
22	1	412000700	Front Case
23	1	311501150	Air Guide Blade
24	1	311501120	Filter cover
25	1	757000760	AC Power Cord, 2PIN, DS
26	1	DSCPU-00	PCBA,CPU,DS
27	3	714320412	PH-TP 4X44
28	14	714400408	TH-DT 4x10 Y
29	6	714400410	TH-DT 4x10 Y
30	9	714300301	PH-DT 3x6 D
31	1	773000030	Ionizer, 230V, -5KV
32	1	774800180	Motor, DS 220,230
33	1	753100450	Capacity, 7.5uf 400v
34	1	716200020	Spring Washer
35	1	714800620	Nut
36	1	741202990	Suction Tube
37	1	441202470	Capillary, R134A, 07t
38	1	441202470	Process Tube, ø1.0 700mm
39	1	441200470	Process Tube
40	1	741202960	Suction Tube, DS
41	1	410500070	Metallic Tip
42	1	768000193	Defrost sensor
43	1	753100140	Capacity, 1.5uf 450V
44	1	311501170	Bucket Handle, DS
45	1	780003550	Carton, AHNB20WBUS
46	1	413202120	Control Panel, AHNB20WBUS
47	1	784002820	User Manual, GE, AHNB20WBUS
48	1	745900100	Filter , 245x195x3t
49	1	705000050	Pipe,(ID ϕ ,L1200)

AHNB11WBUS

	QTY	Part No.	Component
1	1	311000740	Base, DS
2	1	740004630	Compressor, 6TS035DAA 220-240V
3	1	741202970	Suction Tube, DS
4	1	741202980	Discharge tube, DS
5	1	342200570	Condenser, DJ 12
6	1	342200560	Evaporator, 115P, 9R
7	1	311000730	Mid Shield, DS
8	1	311000750	Drain Pan, DS
9	1	DSWATER	Water Level Signal Wire
10	1	311000790	Air Duct, DS 20
11	1	246600180	Fan
12	1	311000700	Front Case, DS
13	1	311000710	Rear Case, DS
14	1	311000780	Heat Exchanger Upper, DS
15	1	DSRELAY2NI	PCBA, RELAY, DS, 220V
16	1	311000770	Bucket, DS modified to 01
17	1	311501180	Float, DS
18	1	705000060	magnet, 16x13x3t
19	1	311000720	Upper Cover, DS
20	1	311501160	Handle, DS
21	1	311200530	Air Outlet Grill, DM, DE
22	1	412000700	Front Case
23	1	311501150	Air Guide Blade
24	1	311501120	Filter cover
25	1	757000860	AC Power Cord, 2PIN, DS
26	1	DSCPUNI-00	PCBA,CPU,DS
27	3	714320412	PH-TP 4X44
28	14	714400408	TH-DT 4x10 Y
29	6	714400410	TH-DT 4x10 Y
30	9	714300301	PH-DT 3x6 D
31	—		
32	1	774800180	Motor, DS 220,230
33	1	753100580	Capacity, 0.5uf 450v
34	1	716200020	Spring Washer
35	1	714800620	Nut
36	1	741202990	Suction Tube
37	1	441202380	Capillary, R134A, 07t
38	1	441202680	Process Tube, ø1.0 1300mm
39	1	441200470	Process Tube
40	1	741202960	Suction Tube, DS
41	1	410500070	Metallic Tip
42	1	768000193	Defrost sensor
43	1	753100570	Capacity, 5.0uf 450V
44	1	311501170	Bucket Handle, DS
45	1	780003560	Carton, AHNB11WBUS
46	1	413202130	Control Panel, AHNB11WBUS
47	1	784002830	User Manual, GE, AHNB11WBUS
48	1	745900100	Filter , 245x195x3t
49	1	705000050	Pipe,(ID ϕ ,L1200)

Circuit diagram

:: CPU PCBA :: AHNB20WBUS / AHNB11WBUS



Circuit diagram

:: Relay PCBA :: AHNB20WBUS / AHNB11WBUS